

Claims

What is claimed is:

1. A bank note processing machine in which bank notes placed on an insert tray are sequentially delivered one by one to a discrimination sensor section; the bank note types and the genuineness/falsehood of said bank notes being discriminated based on signals detected by a discrimination sensor at said discrimination sensor section; and said discriminated bank notes being subsequently sent to an accumulating section, said bank note processing machine comprising said discrimination sensor being formed by a light projecting section for irradiating through a slit area substantially over the entire passing width of said bank notes and a light receiving section constituted by a photodiode array; said light projecting section being formed by a light guide plate and at least one LED provided on an end face of said light guide plate; light from said LED being inputted to said light guide plate and an advance direction of entered light being changed into a perpendicular direction to a light axis of said light guide plate; light being uniformly emitted from a whole surface of said light guide plate irrespective of a distance from said LED; and said light projecting section and light receiving section being provided in a face-to-face relationship with a transport path of said bank notes sandwiched therebetween or provided in parallel on one side of said transport path.

2. A bank note processing machine according to claim 1, wherein said LED is an ultraviolet light, infrared light, red light, green light or blue light LED.

3. A bank note processing machine according to claim 2, wherein a display section is provided integrally with or separately from said bank note processing machine to display said bank notes with ultraviolet light irradiated from said light projecting section, thereby displaying images of said bank notes on said display section based on fluorescent light that is visible light generated as a result of transmission or reflection of said ultraviolet light at least when said bank notes react to said ultraviolet light.

4. A bank note processing machine according to claim 2, wherein a display section is provided integrally with or separately from said bank note processing machine to display images of said bank notes on said display section based on reflected light or transmitted light of infrared light obtained by irradiating said bank notes with said infrared light from said light projecting section.

5. A bank note processing machine according to claim 1, wherein said accumulating section is a single accumulating section.

6. A bank note processing machine in which bank notes placed on an insert tray are sequentially delivered one by one to a discrimination sensor section; the bank note types and the genuineness/falsehood of said bank notes being discriminated based on signals detected by a discrimination sensor at said discrimination sensor section; and said discriminated bank notes being subsequently sent to an accumulating section, said bank note processing machine comprising said discrimination sensor being formed by a light projecting section for irradiating through a slit area substantially over the entire passing width of said bank notes and a light receiving section constituted by a photodiode array; said light projecting section being formed by a light guide plate and an infrared light LED, a red light LED, a green light LED and a blue light LED provided on an end face of said light guide plate; lights from said respective LEDs being inputted to said light guide plate and respective advance directions of entered lights being changed into perpendicular directions to a light axis of said light guide plate; light being uniformly emitted from a whole surface of said light guide plate irrespective of distances from said respective LEDs; and said light projecting section and light receiving section being provided in a face-to-face relationship with a transport path of said bank notes sandwiched therebetween.

7. A bank note processing machine according to claim 6, wherein a display section is provided integrally with or separately from said bank note processing machine to display images of said bank notes on said display section based on reflected light or transmitted light of infrared light obtained by irradiating said bank notes with said infrared light from said light projecting section.

8. A bank note processing machine according to claim 6, wherein said accumulating section is a single accumulating section.

9. A bank note processing machine in which bank notes placed on an insert tray are sequentially delivered one by one to a discrimination sensor section; the bank note types and the genuineness/falsehood of said bank notes being discriminated based on signals detected by a discrimination sensor at said discrimination sensor section; and said discriminated bank notes being subsequently sent to an accumulating section, said bank note processing machine comprising a pair of light projecting and receiving sections being disposed on a transport path of said bank notes and sandwiched therebetween; said light projecting and receiving sections being formed by a light guide plate to uniformly emit light from a whole surface for irradiating through a slit area substantially over the entire passing width of said bank notes, an infrared light LED, a red light LED, a green light LED and a blue light LED provided on an end face of said light guide plate, and a photodiode array disposed in parallel with said light guide plate; lights from said respective LEDs being inputted to said light guide plate and respective advance directions of entered lights being changed into perpendicular directions to a light axis of said light guide plate; and information on the top and bottom of the same part of said bank notes passing through said transport path being simultaneously detected by said pair of light projecting and receiving sections using reflected light.

10. A bank note processing machine according to claim 9, wherein corners of said light guide plate are cut surfaces and wherein light from the infrared light LED, red light LED, green light LED and blue light LED is radiated from said cut surfaces.

11. A bank note processing machine according to claim 9, wherein a display section is provided integrally with or separately from said bank note processing machine to display images of said bank notes on said display section based on reflected light or transmitted light of infrared light obtained by irradiating said bank notes with said infrared light from said light projecting section or light projecting and receiving section.

12. A bank note processing machine according to claim 10, wherein a display section is provided integrally with or separately from said bank note processing machine to display images of said bank notes on said display section based on reflected light or transmitted light of infrared light obtained by irradiating said bank notes with said infrared light from said light projecting section or light projecting and receiving section.

13. A bank note processing machine in which bank notes placed on an insert tray are sequentially delivered one by one to a discrimination sensor section; the bank note types and the genuineness/falsehood of said bank notes being discriminated based on signals detected by a discrimination sensor at said discrimination sensor section; and said discriminated bank notes being subsequently sent to an accumulating section, said bank note processing machine comprising said discrimination sensor being formed by a light projecting section for irradiating through a slit area substantially over the entire passing width of said bank notes and an light receiving section constituted by a photodiode array; said light projecting section being formed by a light guide plate and two LEDs provided on an end face of said light guide plate; lights from said LEDs being inputted to said light guide plate and respective advance directions of entered lights being changed into perpendicular directions to a light axis of said light guide plate; light being uniformly emitted from a whole surface of said light guide plate irrespective of a distance from said LEDs; and said light projecting section and light receiving section being provided in a face-to-face relationship with a transport path of said bank notes sandwiched therebetween or provided in parallel on one side of said transport path.

14. A bank note processing machine according to claim 13 wherein said two LEDs are an infrared light LED and a visible light LED.

15. A bank note processing machine in which bank notes placed on an insert tray are sequentially delivered one by one to a discrimination sensor section; the bank note types and the genuineness/falsehood of said bank notes being discriminated based on signals detected by a discrimination sensor at said discrimination sensor section; and said discriminated bank notes being subsequently thrown out to an accumulating section, said bank note processing machine comprising a light projecting section and a light projecting and receiving section being disposed on a transport path of said bank notes sandwiched therebetween; said light projecting section being formed by a first light guide plate to uniformly emit light from a whole surface for irradiating through a slit area substantially over the entire passing width of said bank notes and a first infrared light LED and a first visible light LED provided on an end face of said first light guide plate; said light projecting and receiving section being formed by a second light guide plate to uniformly emit light from a whole surface for irradiating through a slit are substantially over entire passing width of said bank notes, a second infrared light LED and a second visible light LED provided on an end face of said second light guide plate, and a photodiode array disposed in parallel with said second light guide plate; and information on the top and bottom of the same part of said bank notes passing through said transport path being detected by said photodiode array using reflected light and transmitted light.